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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/824,051 | 04/13/2004 | Kramadhathi V. Ravi | 42P8813XD | 6109 |

8791 7590 03/05/2007
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| EXAMINER |
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NGUYEN, JOSEPH H

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| ART UNIT | PAPER NUMBER |
|----------|--------------|

2815

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 03/05/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/824,051 | Applicant(s) RAVI, KRAMADHATI V. | |
| | Examiner Joseph Nguyen | Art Unit 2815 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09/29/06 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bendik et al. (US 5,591,678) in view of Okojie (US 6,248,646).

Regarding claim 1, Bendik et al. discloses in figure 2 an apparatus comprising a plurality of circuit substrates 46a, 46, 46b and the plurality of circuit substrates are in a non-planar orientation relative to one another (elements 46a, 46, 46b are clearly in non-planar orientation) stacked one on the other, each circuit substrate 46 comprising a single crystal semiconductor layer having smallest dimension reduced (col. 4, lines 10-15); circuit devices 50a, 50, 50b formed in the single crystal layer of each of the plurality of circuit substrates; and a plurality of interconnects 56 (col. 7, lines 1-2) disposed between the plurality of circuit substrates.

It is noted that the phrase "a single crystal semiconductor layer having a smallest dimension reduced" is a broad limitation and herein interpreted as the single crystal semiconductor layer 46 being thinned to a certain thickness as disclosed in col. 4, lines 10-15 of Bendik et al. Further, the phrase "reduced prior to stacking" is merely product by process limitation. MPEP § 2113 states that even though product by process claims

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are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend upon its method of production. If the product in the product by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product made by a different process. In re Thorpe, 777, F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). In this case, it is clear that whether the single crystal semiconductor layer has a smallest dimension reduced prior to stacking or after stacking does not change this smallest dimension and therefore would not structurally distinguish from Bendik et al. herein.

Bendik et al. does not a plurality of circuit substrates on a substrate. However, Okojie discloses in figure 2 the plurality of circuit substrates 24 on a substrate 20 (col. 2, lines 63-64). It is further noted that wafers 24 of Okojie are hereby considered "circuit substrates" on which semiconductor elements will be formed. In view of such teaching, it would have been obvious at the time of the present invention to modify Bendik et al. by including the plurality of circuit substrates on a substrate in order to enable an array of circuit substrates to be concurrently produced on a larger, industry standard sized wafer (substrate) and to consequently increase production rates.

Regarding claim 4, Bendik et al. discloses in figure 3 the circuit devices form integrated circuits 70b, 74 that interact with other electrical devices off the single crystal layer on which the integrated circuits are formed (col. 7, lines 29-31).

Regarding claim 5, Okojie discloses the smallest dimension of each circuit substrate 24 comprises a thickness less than 100 microns (col. 3, lines 33-36).

Regarding claim 6, Bendik et al. discloses a dielectric material 44 (col. 4, line 5) disposed between the adjacent ones of the plurality of circuit substrates 46a, 46, 46b.

Response to Arguments

Applicant's arguments filed on 12/29/2006 have been fully considered but they are not persuasive.

With respect to claim 1, applicant argues there is no motivation to combine Bendik et al. and Okojie. However, as explained above, Bendik et al. discloses in figure 2 substantially all the structure set forth in claim 1 except a plurality of circuit substrate on a substrate, and Okojie discloses this feature. As such, it would have been obvious to modify Bendik et al. by including a plurality of circuit substrate on a substrate such that an array of circuit substrates can be concurrently produced on a larger, industry standard sized wafer and to consequently increase production rate. Furthermore, applicant argues Bendik et al. does not disclose the single crystal semiconductor layer has the smallest dimension reduced prior to stacking as recited in now amended claim 1. However, as explained above, the phrase "thinned prior to stacking" is merely product by process limitation. MPEP § 2113 states that even though product by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend upon its method of production. If the product in the product by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product made by a different process. In re Thorpe, 777, F.2d 695, 698, 227 USPQ 964, 966

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(Fed. Cir. 1985). In this case, it is clear that whether the single crystal semiconductor layer has a smallest dimension reduced prior to stacking or after stacking does not change this smallest dimension and therefore would not structurally distinguish from Bendik et al. herein.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

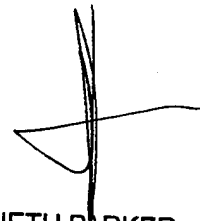
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (571) 272-1734. The examiner can normally be reached on Monday-Friday, 8:30 am- 5:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on (571) 272-2298. The fax phone number for

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the organization where this application or proceeding is assigned is (571) 273-8300 for regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be 'K. Parker', written over a vertical line.

KENNETH PARKER
SUPERVISORY PATENT EXAMINER

Joseph Nguyen

Patent Examiner

February 26, 2007.